10. LTWMP Project Costs and Implementation Schedule

Capital and annual cost estimates were prepared for the LTWMP to provide preliminary costs for upgrading the existing DWTP, constructing a seasonal storage reservoir, providing a Phase I effluent management project and providing a Phase II recycled water distribution system. These estimates were prepared in accordance with the guidelines of the American Association of Cost Engineers (AACE). According to the definitions of AACE, the order of magnitude estimate is defined as an approximate estimate made without detailed engineering data. It is normally expected that an estimate of this type would be accurate within +50% or -30%. These percentages should be viewed as statistical confidence limits, and should not be confused with contingencies. The cost estimates shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs may vary from estimates presented here.

10.1.1. DWTP Estimated Costs

The cost estimates for the treatment plant improvements are based on the actual processes selected for final design. The estimated costs for construction of the DWTP are shown in **Table 10-1**. The facilities included in the estimate are described in **Section 9.**

Table 10-1: Cost Estimate on DWTP Upgrade Alternatives (5.0 MGD)

Description	Membrane Bioreactor ($ thousands)[a]
Paving and grading	$2,722
Demolition	$325
Yard Piping	$3,072
Pretreatment Facilities	$905
Septic Receiving Station	$241
MBR Equipment	$14,422
Chlorine Contact Basin	$1,621
Solids Handling Facilities	$810
Effluent Pump Station	$52
Odor Control Biofilter	$172
Solids Stabilization Basin	$158
Vactor Truck Dump Facility	$32
Chemical Handling Facilities	$299
Plant Water Pump Station	$129
Plant Drain Pump Station	$84
Operations Building	$1,415
Electrical/Instrumentation	$8,395
Liquefaction Mitigation	$2,670
Bonds/Insurance	$700
Submittals	$150
Mobilization/General Conditions	$600
O&M Manuals	$100
CPM Schedule	$5
Testing	$350

Description		Membrane Bioreactor
Sheeting/Shoring		$100
Punchlist		$350
Subtotal		$39,879
Contingency	20%	$7,976
Contractor Overhead & Profit	10%	$4,786
Total Construction Costs		$52,641
Engineering/Administration	10%	$5,264
Construction Management	10%	$5,264
Total DWTP Costs		$63,169

[a] Costs indexed to September 2005 San Francisco Construction Cost Index SF CCI = 8265.45

10.1.2. Phase I Seasonal Storage Reservoir Costs

The cost estimates for the Phase I seasonal storage reservoir is for the 1,500 acre-foot storage reservoir to be constructed on the west side of Highway 156 in the area of the existing percolation beds. The costs include the use and compaction of local clay soils as the reservoir liner. A synthetic membrane liner would add $7 – 8 million to the total project cost. The estimated costs for construction of the Phase I Seasonal Storage Reservoir are shown in **Table 10-2**. The facilities included in the estimate are described in **Section 9**.

Table 10-2: Preliminary Cost Estimate for Phase I Seasonal Storage Reservoir

Description		Phase I Seasonal Storage Reservoir
		($ thousands)[a]
Mobilization/Demolition		$40
Site Prep/Demo/Clean Up		$2,850
Excavate @ Reservoir		$1,740
Place and Compact Fill		$2,620
Haul Surplus to Pond 2		$170
Finish Grade and Compact		$1,900
Install Site Fencing @ 1,500 AC-FT Res		$120
Subtotal		$9,440
Contingency	30%	$2,830
Contractor Overhead & Profit	10%	$1,230
Total Construction Costs		$13,500
Engineering/Administration	10%	$1,350
Construction Management	10%	$1,350
Total Phase I Seasonal Storage Reservoir Costs		$16,200

[a] Costs indexed to September 2005 San Francisco Construction Cost Index SF CCI = 8265.45

10.1.3. Phase I Interim Effluent Management Project Costs

The cost estimates for the Phase I Interim Effluent Management Project are conceptual in nature and are taken from the *City of Hollister Phase I Effluent Management Project, Phase I Alternatives, Draft Technical Memorandum* (RMC Water and Environment, 2005). The estimated costs for construction of three alternatives for the Phase I Project are shown in **Table 10-4**. The three alternatives are presented in **Section 9**.

Table 10-3: Preliminary Cost Estimate for Phase I Interim Effluent Management Project

Description	Interim Effluent Management Project ($ thousands)[a]		
	Alternative 1	Alternative 2	Alternative 3
Distribution System Pumping	$3,690	$4,990	$3,590
Distribution System Piping	$7,670	$5,320	$8,319
Raw Construction Costs[b]	$11,360	$10,310	$11,910
Construction Contingency	$3,410	$3,090	$3,570
Easements	$114	$120	$204
Engineering/Administration	$2,980	$2,700	$3,140
Construction Management	$1,477	$1,340	$1,548
Contractor Overhead and Profit	$1,477	$1,340	$1,548
Total Phase I Interim Effluent Management Project Costs[b]	$20,820	$18,900	$21,920

[a] Costs indexed to September 2005 San Francisco Construction Cost Index SF CCI = 8265.45
[b] Rounded to nearest $10,000

10.1.4. Phase II Seasonal Storage Reservoir Costs

In Phase II, an additional storage volume of 500 acre-feet will be required for the projected flows. Phase II storage costs are preliminary, since the location and site specific soil conditions are unknown at this time. The estimated costs for construction of the Phase II Seasonal Storage Reservoir are shown in **Table 10-3**.

Table 10-4: Preliminary Cost Estimate for Phase II Seasonal Storage Reservoir

Description		Phase II Seasonal Storage Reservoir ($ thousands)[a]
500 acre-foot reservoir		$3,540 – 5,500
Subtotal		$3,540 – 5,500
Contingency	30%	$1,060 – 1,650
Total Construction Costs		$4,600 – 7,150
Engineering/Administration	20%	$920 – 1,430
Construction Management	10%	$460 - 720
Total Phase II Seasonal Storage Reservoir Costs		$5,980 – 9,300

[a] Costs indexed to September 2005 San Francisco Construction Cost Index SF CCI = 8265.45

10.1.5. Phase II Recycled Water Project Costs

The cost estimates for the Phase II Recycled Water Project are conceptual in nature and are taken from the *Draft San Benito County Regional Recycled Water Project Facility Plan* (RMC Water and Environment, 2005). The estimated costs for construction of three alternatives for the Phase II Project are shown in **Table 10-5**. The three alternatives are presented in the Draft Facility Plan.

Table 10-5: Preliminary Cost Estimate for Phase II Recycled Water Project

Description	Phase II Recycled Water Project ($ thousands)[a]		
	Alternative 1	Alternative 2	Alternative 3
Pump Station at DWTP	$2,090	$3,615	$1,075
Backbone Piping	$3,005	$3,949	$6,071
Service Lateral Piping	$1,614	$2,176	$1,614
Turnouts	$500	$500	$500
Raw Construction Costs[b]	$7,210	$10,420	$9,260
Construction Contingency	$2,160	$3,070	$2,780
Easements	$110	$110	$110
Engineering/Administration	$1,900	$2,660	$2,410
Construction Management	$940	$1,330	$1,200
Contractor Overhead and Profit	$940	$1,330	$1,200
Environmental Documentation	$150	$150	$150
Total Phase II Recycled Water Project Costs[b]	$13,410	$17,110	$17,110

[a] Costs indexed to September 2005 San Francisco Construction Cost Index SF CCI = 8265.45
[b] Rounded to nearest $10,000

10.1.6. Total Project Cost Summary

The total estimated project cost for the City of Hollister's LTWMP is summarized in **Table 10-6**.

Table 10-6: Estimated LTWMP Project Costs

LTWMP Capital Construction Costs Description	Capital Costs ($ millions)[a,b]	Engineering/ Admin ($ millions)	Construction Management ($ millions)[c]	Total Project Costs ($ millions)
Domestic Wastewater Treatment Plant	$ 52.64[d]	$ 5.26[e]	$ 5.26	$ 63.16
Phase I Seasonal Storage Reservoir[f]	$ 13.50[g]	$ 1.35[e]	$ 1.35	$ 16.20
Phase I Effluent Management Project[h]	$ 14.86 – 17.23[g]	$ 2.70 - 3.14[h]	$ 1.34 – 1.55[h]	$ 18.90 – 21.92[h]
Phase I Subtotal	**$ 81.00 – 83.37**	**$ 9.31 – 9.75**	**$ 7.95 – 8.16**	**$ 98.26 – 101.28**
Phase II Recycled Water Project[i]	$ 10.57 - 14.90[g]	$ 1.90 – 2.66[i]	$ 0.94 – 1.33[i]	$ 13.41 – 18.89[i]
Phase II Seasonal Storage Reservoir(s)	$ 4.60 - 7.15[g]	$ 0.92 – 1.43	$ 0.46 – 0.72	$ 5.98 – 9.30
Phase II Subtotal	**$ 15.17 – 22.05**	**$ 2.82 – 4.09**	**$ 1.40 – 2.05**	**$ 19.39 – 28.19**
Total Project Cost	**$ 96.17 – 105.42**	**$ 12.13 – 13.84**	**$ 9.35 – 10.21**	**$ 117.65 – 129.47**

[a] Based on September 2005 ENR construction index for San Francisco (SF CCI = 8265.45).
[b] Includes 10% allowance for Contractor overhead and profit.
[c] Construction Management Costs = 10% of Capital.
[d] Includes 20% Contingency.
[e] Engineering/Administration = 10% of Capital.
[f] Reservoir cost estimate assumes use of local clay soils for compacted clay liner. Use of a synthetic liner would add $ 7 – 8 million in total cost.
[g] Includes 30% Contingency.
[h] Cost estimate is range of costs presented in Technical Memorandum (RMC Water and Environment, 2005).
[i] Cost estimate is range of costs from Facility Plan (RMC Water and Environment, 2005).

10.1.7. Estimated Annual O&M costs

The preliminary estimates of the annual O&M costs for the LTWMP are presented in **Table 10-7**.

Table 10-7: Preliminary Annual O&M Costs

Description	Annual O&M Costs ($ millions/yr)
Domestic Wastewater Treatment Plant	$ 3.7
Seasonal Storage Reservoir	$ 0.1
Additional Storage Reservoir	$ 0.1
Phase I Interim Effluent Management Project	$ 0.3 –0.4
Phase II Recycled Water Project	$ 0.1 – 0.4
Total Annual Cost	**$4.3 – 4.7**

10.2. LTWMP Implementation Schedule

Water recycling in one form or another was identified as the only effluent management strategy that met all of the planning and selection criteria of the stakeholders. The Ultimate Regional Recycled Water Project proposed by the Water Resource Association of San Benito County provides the stakeholders with a region-wide plan for water recycling. Full implementation of this project however, can't be accomplished until the City has reduced TDS levels in its effluent to acceptable levels and the recycled water market in the region has been more fully developed.

Because effluent quality and market assurance require additional time to achieve, the City will implement the Phase I Interim Effluent Management Project to reduce effluent percolation into the basin as wastewater flows to the DWTP increase. The use of recycled water to irrigate forage and pasture land has been selected as the best interim project for the City to implement until such time as the Phase II Recycled Water Project can be implemented. It is feasible that some portion of the Phase I Project may be incorporated into the Phase II Recycled Water Project. The Phase I Interim Effluent Management Project will incorporate seasonal storage of recycled water to maximize reuse. It will also include a pilot program to evaluate the feasibility of blending wastewater with imported surface water for use on crops that are more sensitive to TDS than typical forage/pasture crops.

Extensive planning efforts and coordination by the participating stakeholders has contributed to both the knowledge base and policy foundation for managing water resources in the Hollister urban area and northern San Benito County. A key realization derived from this work is that there is not a single, long-term, reasonable, immediately available mechanism to dispose of treated wastewater.

Based on the above considerations, the City of Hollister proposes the following schedule in order to implement a phased recycled water program. The proposed implementation schedule contains milestones for revision and updating of the LTWMP based upon the additional master planning necessary to fully integrate water and wastewater resources to address water quality issues for the basin as well as further development of a local market for recycled water beyond forage and pasture.

10.2.1. Project Schedule

A preliminary schedule with a description of the key milestones for implementing the LTWMP is presented below. This schedule may change due to circumstances beyond the City's reasonable control, such as environmental reviews or delays. A key juncture in the proposed project schedule is scheduled to occur in the spring/summer of 2007. At that time the stakeholders will complete the *Hollister Urban Area Water and Wastewater Master Plan*. That effort will identify integrated work plans for long-term management and quality improvement of wastewater and long-term supply and quality of potable water. The ultimate disposition of the IWTP would also be addressed. Upon completion of the Master Plan, amendments to the LTWMP will be made to incorporate the implementation activities identified in the Master Plan with those identified in the *San Benito County Regional Recycled Water Project Facility Plan.* Additionally, a determination will be made as to whether additional forage/pasture reuse will be necessary prior to full implementation of the Phase II Recycled Water Project.

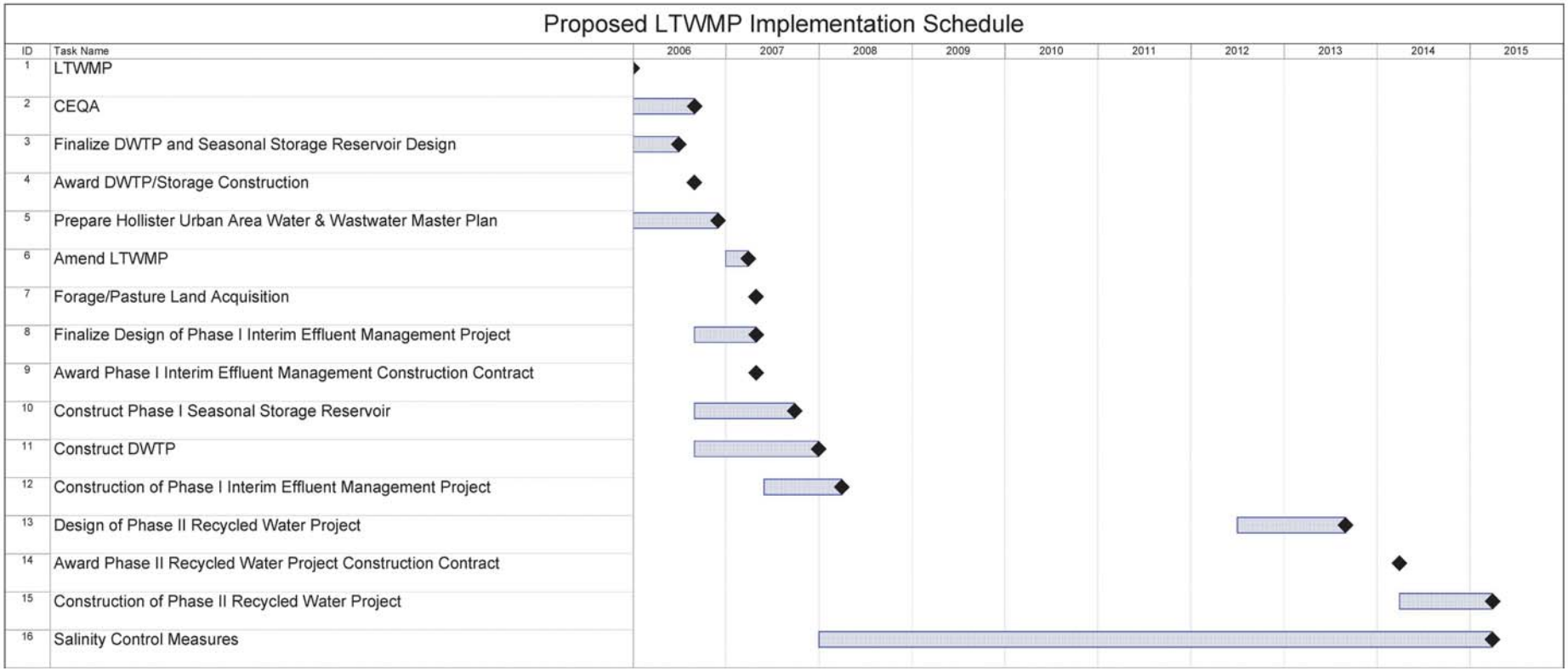
Table 10-8: Proposed LTWMP Implementation Schedule

Activity	Completion Date[a]	Constraints/Comments
LTWMP	December 2005	The LTWMP will be submitted to the RWQCB for review and comment.
CEQA	August 2006	Completion of an Environmental Impact Report (EIR) for the LTWMP.
Finalize Design of Treatment and Storage Facilities	June 2006	Design of the DWTP and Seasonal Storage Reservoir will be finalized in conjunction with completion of CEQA review.
Award Treatment/Storage Construction Contract	August 2006	Award of contract for construction of MBR Wastewater Treatment Facility and the 1,500 acre-foot seasonal storage reservoir.
Hollister Urban Area Water and Wastewater Master Plan	December 2006	Completion of Master Plan which integrates water and wastewater resource management with City and County General Plans and policy guidelines adopted by the City, County and San Benito County Water District.
Amend LTWMP	March 2007	The LTWMP will be amended upon adoption of the Hollister Urban Area Water and Wastewater Master Plan. Specific updates to the LTWMP will include: • Identification of specific actions and timelines for implementing the Phase II Recycled Water Project. • Disposition of IWTP. • Identify water quality improvement actions. • Development of additional forage and pasture land (if required). • Update of the implementation schedule (if required).
Acquisition of Forage/Pasture Land	April 2007	In order to complete construction of the Phase I Interim Effluent Management Project concurrently with the DWTP, additional land must be acquired or leased.
Finalize Design of Phase I Interim Effluent Management Project	April 2007	Design of Phase I distribution, pumping and forage/pasture reuse facilities.
Award Phase I Interim Effluent Management Project Construction Contract	May 2007	Construction of the Phase I Interim Effluent Management Project should be completed by start-up of the DWTP.
Complete Construction of Phase I Seasonal Storage Reservoir	September 2007	The Phase I seasonal storage reservoir must be constructed prior to the 2007/2008 wet weather season because the capacity of the City's percolation ponds will be reduced during construction of the DWTP project.
Complete Construction of the DWTP	December 2007	The construction of the DWTP must be completed by December 31, 2007.

Activity	Completion Date[a]	Constraints/Comments
Complete Construction of the Phase I Interim Effluent Management Project	March 2008	Construction of the Phase I Interim Effluent Management Project Facilities must be complete by the end of the 2007/2008 wet weather season.
Salinity Control Program Complete	2015[a]	Completion date set by MOU.
Complete Design of Phase II Recycled Water Project	August 2013[a]	Design of Phase II Recycled Water Project should be scheduled to facilitate completion of construction of these facilities by March 2015 or earlier if recycled water salinity is sufficiently reduced.
Award Phase II Recycled Water Project Construction Contract	March 2014[a]	Construction of the Phase II Recycled Water Project should be complete by March 2015.
Complete Construction of Phase II Recycled Water Project	March 2015[a]	Completion to coincide with achievement of salinity goals by 2015 (Ref: MOU).

[a] Dates may be amended in March 2007 after completion of the Hollister Urban Area Water and Wastewater Master Plan.

The following schedule graphically shows the proposed implementation plan for the LTWMP for the City of Hollister. This schedule shows the project timelines for the treatment, storage, and interim effluent facilities and project planning.



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HydroScience Engineers, Inc.

Figure 10-1
City of Hollister Long-Term Wastewater Management Program
Proposed LTWMP Implementation Schedule